PROGRAMMABLE EFFECTS PROCESSOR™

model 4530

OPERATING GUIDE

CAUTION
TO PREVENT ELECTRICAL SHOCK OR FIRE HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
BEFORE USING THIS APPLIANCE, READ BACK COVER FOR FURTHER WARNINGS.

CLASS B COMPUTING DEVICE: INFORMATION TO USER

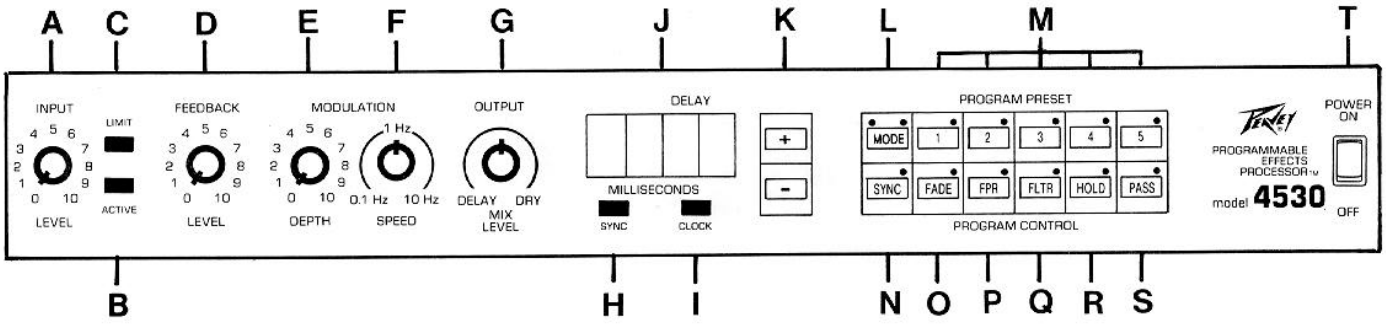
This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient the receiving antenna
- relocate the equipment with respect to the receiver
- move the equipment away from the receiver
- plug the equipment into a different outlet so that the equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio-television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems"

This booklet is available from the US Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.



FRONT PANEL CONTROLS

INPUT LEVEL CONTROL (A)

Adjusts the input sensitivity for optimum matching with the input signal. The control should be adjusted to a level that allows the Limit LED (C) to light occasionally on program peaks. Failure to adjust the Input Level control correctly may cause increased distortion and degrade the signal-to-noise performance of the unit.

Note that the Input Level control operates in conjunction with the Input Level switch (BB) located on the rear panel. If the Input Level switch is incorrectly set relative to the strength of the input signal, correct adjustment of the Input Level control may be difficult or impossible.

ACTIVE LED (B)

Provides an indication of the minimum signal level necessary for operation of the processor. The LED illuminates 12 dB below the onset of clipping, and should illuminate frequently during a performance.

LIMIT LED (C)

Provides an indication that only 6 dB of headroom remains available in the processor. The LED should light occasionally during program peaks, but should not remain illuminated for extended periods of time, as this could indicate clipping and increased distortion.

FEEDBACK LEVEL CONTROL (D)

Adjusts the amount of regeneration for flange-type effects and the decay rate for slap-back echo effects. Rotating the control clockwise will increase the amount of regeneration or lengthen the decay rate.

LFO MODULATION DEPTH CONTROL (E)

Adjusts the depth of the LFO modulation or the width of the sweep. Rotating the control clockwise increases the width of the LFO sweep. The sweep of the LFO also controls the tracking of the anti-aliasing filters, eliminating increased coloration due to the extended modulation depth.

LFO MODULATION SPEED CONTROL (F)

Adjusts the frequency of the LFO modulator and the sweep rate of any modulated effects. Rotating the control clockwise increases the speed of the modulator. The waveshape generated by the LFO is a sine wave to produce the smoothest and most pleasing sweep effect.

OUTPUT MIX LEVEL CONTROL (G)

Sets the mix ratio for the delay and dry output signal levels. Rotating the control can adjust the output mix from a signal consisting of only the original unprocessed sound (fully clockwise) to a signal consisting of only the delayed signal sound (fully counterclockwise).

Note that an audible drop in signal level may occur at the 1:1 mix ratio position (12 o'clock control position) due to cancellation of certain frequencies corresponding to 180-degree phase shifts.

SYNC INDICATOR LED (H)

Illuminates when the processor has acquired sync or trigger signal from an external source. The indicator works in conjunction with the Sync Input jack (X) or MIDI In jack (Z) on the rear panel, and with the Sync Control key (N) in the program control switch matrix to guard against changes in the delay time. The processor will respond to external signals only when the sync function has been enabled via the Sync Control key. The MIDI sync code will be recognized only when the MIDI time code is set to some number other than zero (0).

CLOCK INDICATOR LED (I)

Flashes at the repeat rate of the delay line in order to give a visual "tempo" strobe indication of the displayed delay time. At extremely short delay times (approximately 30 milliseconds or less), the LED will appear to be continuously illuminated due to the short on/off cycle time.

PARAMETER DISPLAY (J)

This four-digit, seven segment LED display provides a numeric representation of four different functional parameters of the processor, as chosen by the Mode Select key (L). These parameters include:

1) Delay Time (Milliseconds)
2) Bank Number (0 to 25)
3) Base Bank Number (0 to 105)
4) MIDI Time CLock Count (0 to 255)

Delay Time and Bank Number are the normally displayed parameters. Pressing the Mode Select key (L) and releasing it will alternately display these two parameters. The selection of Delay Time display is indicated when neither of the LEDs on the Mode Select key (L) is illuminated. In the range from 0.1 to 127 milliseconds, the display will show the nearest 0.1 millisecond. From 128 to 4095 milliseconds, the display will show the nearest 1.0 millisecond.

Selection of the Bank Number is indicated by the illumination of the green LED on the Mode Select key. The Bank number can vary from 0 to 25, indicating that for any given Base Bank Number, access is provided for up to 26 banks of 5 presets each (a total of 130 presets from any Base Bank Number).

If the Mode Select key (L) is depressed and held for approximately 2 seconds, the Base Bank Number will be displayed. Selection of the Base Bank Number is indicated by the illumination of the yellow LED on the "MODE" switch.

If the Mode Select key (L) is depressed and held for approximately 4 seconds, the MIDI Time Clock Count will be displayed. The selection of the MIDI Time Clock Count is indicated by the illumination of both the green and the yellow LED on the Mode key.

During the first few seconds of operation, the display window will show the MIDI "receive" channel. To change the MIDI channel, rotate the Input Level control (A) until the desired channel number appears.

PARAMETER INCREMENT (+) KEY/PARAMETER DECREMENT (-) KEY (K)

Used to increase (+) or decrease (-) the displayed numerical parameter. A quick press-and-release of either key will change the displayed parameter by one increment. Pressing and holding either key will cause the displayed parameter to increase or decrease continuously until the key is released. The delay time is incremented or decremented in steps consistent with the following range descriptions:

0 to 127 milliseconds	0.1 millisecond steps
128 to 1023 milliseconds	1.0 millisecond steps
1024 to 2047 milliseconds	2.0 millisecond steps
2048 to 4095 milliseconds	4.0 millisecond steps

The other displayed parameters are incremented or decremented in single steps.

PROGRAM CONTROL SWITCH MATRIX

An array of 12 push-button switches which are used to store, recall, or modify programs.

MODE SELECT KEY (L)

Used to select the operational mode for the display and the increment/decrement keys. Four operational modes are assignable from this key, described as follows:

1) Delay Time Display Mode
   Displayed Parameter - Delay Time
   Increment/Decrement Key Function - Change Delay Time
   Parameter Range - 0 through 4095
   LED Indicator Status - None
   Mode Entry - Press MODE key and release
2) Bank Number Display Mode
   Displayed Parameter - Offset Bank Number
   Increment/Decrement Key Function - Change Bank Number
   Parameter Range - 0 through 25
   LED Indicator Status - Single Green LED
   Mode Entry - Press MODE key and release
3) Base Bank Number Display Mode
   Displayed Parameter - Base Bank Number
   Increment/Decrement Key Function - Change Base Bank Number
   Parameter Range - 0 through 105
   LED Indicator Status - Single Yellow LED
   Mode Entry - Depress MODE key and hold for 2 seconds
4) MIDI Time Clock Count Display Mode
   Displayed Parameter - MIDI Time Clock Count
   Increment/Decrement Key Function - Change Clock Count
   Parameter Range - 0 through 255
   LED Indicator Status - Both Yellow and Green LEDs
   Mode Entry - Depress MODE key and hold for 4 seconds

The program storage capability of the processor is arranged in 106 banks, each containing five storage locations. Any storage location will have both a bank number (0 to 105) and a program number (1 to 5). For example, a program labeled "2,3" will be found in bank 2, program location 3.

PROGRAM KEYS 1 THROUGH 5 (M)

The five program keys recall or store programs within the processor's memory. To recall any stored program, first select the correct bank by setting the operational mode to "Bank Select" with the MODE select key (L). The current bank will be displayed in the display window. Use the increment/decrement keys to select the desired bank and press the appropriate Program key. A small LED on the key will be illuminated to show which program has been selected.

To store a program, select the desired bank, then press the desired program key and HOLD IT UNTIL THE LED STOPS FLASHING. The program is now stored in the selected location.

If a program has been recalled, but not modified, the Program key LED will remain constantly lit. When a change in a program is detected, the LED on the Program key will start to flash off and on. An altered program can be stored as previously described, or can be stored in the same (or different) location simply by depressing the appropriate Program key until the LED stops flashing.

SYNC CONTROL KEY (N)

Used to place the processor in the Sync Mode of operation. When this key is depressed, the LED on the key will be illuminated, indicating that the processor is testing the Sync Input jack (X) and the MIDI In connector (Z) for an external trigger source. The processor will synchronize the delay time to any external trigger time received via the Sync Input jack (X) from 100 milliseconds to 4095 milliseconds and can be set to synchronize to any number of MIDI Clock Counts from 1 clock per beat to 255 clocks per beat via the MIDI In connector. If the MIDI Clock Count is set to zero (0), the MIDI sync function is disabled to allow sync only from the Sync Input jack if necessary.

The Sync function MUST be enabled for the processor to acquire external signals via either input; the processor will ignore signals received when the Sync function is disabled. With the Sync function enabled, the processor will acknowledge the receipt of external signals by illuminating the Sync Indicator LED (H).

The Sync function is not a stored preset within the processor's memory, but the MIDI Clock Count is a part of the stored program. Although the Sync function may be continuously enabled if desired, it should be noted that the processor will synchronize to ANY available input signal at the Sync Input Jack, and will synchronize to ANY MIDI clock if the MIDI Clock Count is set to any number other than zero (0) for the selected program preset. When using the processor with other devices, care should be taken to ensure that spurious signals (such as those received from a synthesizer or drum machine) do not inadvertantly alter the desired delay time.

FADE CONTROL KEY (O)

Used to place the effects processor in the Fade mode of operation. When the LED on the key is illuminated, the Fade function is enabled. If the Fade function is enabled, depressing either the Pass Control key (S) or the optional bypass footswitch will cause the delayed signal to "fade out" over any original dry signal preset. The delay time of the Fade effect is controlled by the amount of feedback or regeneration that has been set via the Feedback Level control (D).

Note that enabling the Fade function will disable the normal Bypass function. If operation in Fade mode has been selected, and normal Bypass operation is desired, it will be necessary to disable the Fade function by depressing the Fade Control key.

This function may be stored as a preset parameter within any program.

FPR (FEEDBACK PHASE REVERSAL) CONTROL KEY (P)

Used to change the phase of the feedback signal by 180 degrees. This phase inversion modifies the tonality of any desired effect by changing the frequencies which are "in-phase" or "out-of-phase" with the original dry signal.

This function may be stored as a preset parameter within any program.

FLTR (FEEDBACK FILTER) CONTROL KEY (Q)

Used to enable a low-pass filter in the feedback path of the processor to eliminate any undesired noise regeneration at increased feedback levels. The filter roll-off is set at 5 kHz and only affects the regenerated feedback signal, not the original dry signal or the first delayed signal.

This function may be stored as a preset parameter within any program.

HOLD CONTROL KEY (R)

Used to enable the Hold function of the processor, allowing a continuous replay of a non-degrading "frozen" digital signal. When the Hold function is enabled, no further program material may be input into delay memory. Alterations to the LFO modulation, delay time, and output mix may be made, allowing for a wide variety of possible effects. For example, a musical passage may be input and held, and its "tempo" or duration may be modified via the Delay Increment/Decrement keys or the Sync function. The "frozen" signal will then repeat continuously at the selected rate, while all other incoming signals will pass directly to the processor's outputs. This allows unique opportunities for development of solos or related musical ideas.

Since enabling the Hold function introduces a signal discontinuity, a small "pop" or "glitch" in the signal held in memory is normal. It should also be noted that "holds" of very short duration may be musically unusable due to the rapid repeat rate of such signal interruptions.

The Hold function may also be enabled/disabled via the optional footswitch.

This function is not a stored preset function.

PASS (BYPASS) CONTROL KEY (S)

Used to bypass the processor and to disable any effect in use. Depressing the key will illuminate the LED on the key and will route any input signal directly to the Output Mix Level control (G), which then becomes an output level control for the unprocessed signal. Depressing the key a second time will disable the Bypass function, and restore the prior effect with any modifications which have been made.

It is also possible to enter the Bypass mode via the optional footswitch.

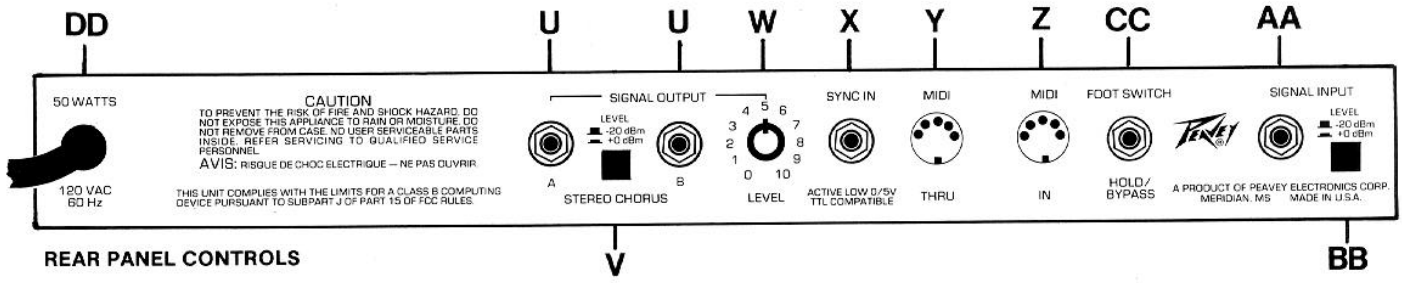
As previously discussed, the Pass Control key may also be used in conjunction with the Fade Control key (O). When the Fade function has been enabled, the Pass Control key enables the Faded Bypass function instead of the normal Bypass function.

This function is not a stored preset function.

POWER ON/OFF SWITCH (T)

Supplies AC power to the processor. When the switch is turned off, the last settings of the processor are stored in memory. When power is reapplied, the last settings prior to shut-off are recalled, with the exception of Hold and Bypass settings, which are defeated by a power-off/power-on cycle.

If the processor should fail to return to its "last-settings" mode, full discharge of the internal battery is indicated. To recharge the battery, simply leave the processor in the power-on mode for a few hours.



REAR PANEL CONTROLS

STEREO CHORUS MIXED OUTPUT JACKS (U)

These ¼" jacks provide capability for both "in-phase" and "out-of-phase" delayed signals simultaneously, both mixed with the original dry signal. In-phase delayed signals appear at the jack marked "A" on the rear panel; out-of-phase signals appear at the jack marked "B". If only a single output is needed, either jack may be used with equal results.

Signal levels at these jacks are controlled by the Output Level control (W) and the Output Level switch (V). The mix of dry/delayed signal at the jacks is controlled by the Output Mix Level control (G) on the front panel.

OUTPUT LEVEL SWITCH (V)

Selects the maximum signal level available at the Stereo Chorus Mixed Output jacks (U). When the switch is in the "in" position, maximum signal output level is +0 dBm. When the switch is in the "out" position, maximum signal output level is -20 dBm.

The position of the Output Level switch is largely determined by the input sensitivity of the next component in the signal path. Consult the operating guide of the "next-in-line" component to determine the optimum signal level.

OUTPUT LEVEL CONTROL (W)

Regulates the level of signals appearing at the Stereo Chorus Output jacks (U), and works in conjunction with the Output Level switch (V). While the switch determines the MAXIMUM output level, the Output Level Control determines the ACTUAL signal level.

SYNC IN JACK (X)

Used to provide an external trigger or sync input to the processor. The sync input signal is "Active Low" and is TTL (0-5 volts) compatible. The input signal may be provided by an external source (such as a sequencer, clock, or other digital device) or from a momentary pushbutton footswitch which connects the "tip" to the "sleeve".

When a footswitch is used, the delay time is set to the time between two consecutive depressions of the switch. If the switch is depressed more than twice, the "pairs" of switch closures are averaged to give the best time approximation. Any time interval greater than 4 seconds and less than 5 seconds will result in a time setting of 4 seconds. Any time interval greater than 5 seconds will not alter the setting at all to avoid any inadvertent syncs.

The Sync In jack is only active when the Sync function has been enabled via the Sync Control key (N) on the front panel.

MIDI IN SOCKET (Z)

A standard DIN connector which allows for a MIDI controller interface to the processor. When such an interface is established, programs stored within the processor memory may be recalled from any remote MIDI controller, such as the Peavey RMC™ 2000. This connector also accepts and processes a MIDI Time Clock Count which can be used to synchronize the delay time to the musical tempo.

MIDI THROUGH SOCKET (Y)

Provided to allow chaining of MIDI-compatible devices without the use of Y-type cables or connectors. Any and all control signals received at the MIDI In socket (Z) will be routed unaltered to the MIDI Thru socket.

The PEP™ 4530 is a MIDI slave device only; it is not intended to control other MIDI-compatible devices. The internal microprocessor can receive information on MIDI channels 1 through 8, and will select any of the stored programs in response to commands MIDI Preset Select 1 through MIDI Preset Select 128.

SIGNAL INPUT JACK (AA)

A stereo ¼" phone jack capable of receiving either single-ended (mono) or differential (balanced) input signals. When a balanced signal is supplied, (+) signal should be routed to the tip, (-) signal to the ring.

The sensitivity of the jack is controlled by the Input Level switch (BB) on the rear panel and the Input Level control (A) on the front panel.

INPUT LEVEL SWITCH (BB)

Selects the input signal sensitivity range for the processor. In the "out" position, the sensitivity is set at a nominal -20 dBm, consistent with most instrument level signal sources. The "in" position corresponds to a nominal sensitivity of +0 dBm, consistent with most line level signal sources. The proper position of the switch is largely determined by the output signal level of the instrument or device providing the signal.

HOLD/BYPASS FOOTSWITCH JACK (CC)

A stereo ¼" phone jack for an optional dual-button momentary footswitch. The actions of this footswitch are identical to the actions of the Hold Control key (R) and Pass Control key (S) on the front panel. This footswitch (#0005067) is available from your Authorized Peavey Dealer.

LINE CORD (DD)

For your safety, we have incorporated a 3-wire line (mains) cable on the back of the chassis with proper grounding facilities. It is not advisable to remove the ground pin under any circumstances. If it is necessary to use the amplifier without proper grounding facilities, suitable grounding adapters should be used. Less noise and greatly reduced shock hazard exists when the unit is operated with the proper grounded receptacles.

NOTE: The above statement in reference to removing the ground pin is applicable only to 120 volt model products.

FUNCTIONAL OPERATION GUIDE

The following is a description of the procedures for setting upt the PEP™ 4530 for any of its operational modes.

GENERAL PRELIMINARY SETUP

1. Plug the unit into an appropriate AC power source.
2. Turn on the unit.
3. During the first few seconds of power-up, adjust the Input Level control (A) to obtain the necessary MIDI receive channel displayed on the numerical display.
4. Plug the signal source into the Signal Input jack (AA) on the rear panel.
5. Select the appropriate operating level with the Input Level switch (BB). For instrument level operation, use the -20 dBm setting.
6. Plug the signal return unit into one of the Stereo Chorus Output jacks (U) on the rear panel. If two returns or two amplifiers are to be used to obtain a pseudo-stereo chorus effect, use both output jacks.
7. Apply an input signal with the highest expected level and adjust the Input Level control (A) so that the Limit LED (C) flashes occasionally.
8. Adjust the Output Level control (W) on the rear panel to obtain the necessary signal level out to drive the return unit as desired.
9. Connect any footswitches or MIDI interfaces to be used.
10. Set the unit up for the desired effect by referring to this manual.

TO SET UP AN EFFECT PROGRAM

1. Perform the setup procedures as described above.
2. Adjust the front panel controls to obtain the desired effect by referring to the descriptions for each of the controls listed in this manual. Any control may be adjusted at any time to alter an existing effect or to create a new effect. Controls which will "override" an existing effect include:
   a. New preset selection
   b. Sync operation
   c. Hold fucntion
   d. Bypass function

TO RECALL A PROGRAM PRESET

1. Select the desired bank via the Mode Select key (L) and the (+/-) Increment/Decrement keys (K).
2. Press the desired Program key (M) momentarily and release. Depressing the key for less than 3 seconds will recall the desired program preset.
3. Alternately, the program preset may be recalled via the MIDI In socket on the rear panel.

TO STORE A PROGRAM PRESET

1. Set up the desired effect as described above.
2. Select the desired bank via the Mode Select key (L) and Increment/Decrement keys (K).
3. Depress the desired Program key (M) and hold it in until the associated LED indicator stops flashing. This should take approximately 3 seconds.

TO USE THE FADED BYPASS FUNCTION

1. Select the desired effect as described above. The Fade function works best with delay times of 100 milliseconds or longer.
2. Depress the Fade Control key (O) to enable the Fade function.
3. Adjust the decay time of the Fade function by adjusting the Feedback Level control (D) on the front panel.
4. Engage the Fade function by depressing the Pass Control key (S) on the front panel or by enabling the Bypass function via the Hold/Bypass Footswitch. To engage the Fade function a second time, it is only necessary to engage the Bypass function again.

TO USE THE SYNC FUNCTION WITH THE SYNC INPUT JACK

1. Connect the "sync" or "trigger" source into the Sync In jack (X) on the rear panel. This can be either a momentary footswitch or a TTL level digital input signal.
2. Depress the Sync Control key (N) on the front panel to enable the Sync function. CAUTION: Any time the Sync function is enabled, the processor will lock to any signal available at the Sync In jack. To avoid any inadvertent trigger, do not depress the Sync Control key unless the Sync function is desired.
3. If a footswitch is used as the Sync input, two consecutive switch depressions will set the delay time. If the switch is depressed more than twice, the consecutive pairs of depressions will be averaged by the internal processor to give the best approximation to the desired delay time. NOTE: If the footswitch is inadvertently pressed and the delay time is set to the wrong value, merely depress the switch again to reset the Sync function.

TO USE THE SYNC FUNCTION WITH THE MIDI IN CONNECTOR

1. Connect the "sync" or clock source to the MIDI In socket (Z) on the rear panel. This can be any source which provides a MIDI Time Clock Code.
2. Set the MIDI Clock Count Number to the desired tempo and beat. Most MIDI clock sources provide 24 MIDI clock tick codes per beat. If the MIDI Clock Count Number is set to 24, the processor will sync to one repeat per beat of the source tempo; a setting of 12 will result in two repeats per beat, etc.
3. Depress the Sync Control key (N) on the front panel to enable the Sync function. NOTE: Any time the Sync function is enabled, and the MIDI Clock Count is set to a number other than zero (0), the processor will lock to any signal available at the MIDI In Connector. To avoid any advertent trigger, do not depress the Sync Control key unless the Sync function is desired.
4. The delay time is set by the internal processor to one repeat for each preset number of MIDI clock codes as determined by the set MIDI Clock Count Number. NOTE: This number is a part of the stored program.

TO SET THE MIDI RECEIVE CHANNEL

1. Turn the processor off.
2. Turn the processor on again. During the first few seconds of power-up, the MIDI receive channel will be displayed on the Parameter Display (J).
3. Adjust the MIDI receive channel with the Input Level control (A) on the front panel. If more time is necessary to adjust the MIDI channel, merely repeat this off/on/adjust procedure until the appropriate channel is selected. NOTE: Once the MIDI receive channel is selected, it will not change unless it is manually changed using this procedure. CAUTION: Some MIDI devices can only transmit control messages on Channel 1. If this is the case, the processor should also be set to Channel 1.

TO FULLY UTILIZE THE ENTIRE PEP™ 4530 PROGRAM MEMORY

1. The program memory is divided into 106 Banks of 5 Presets each. Banks are numbered 0 through 105.
2. These 106 Banks can be accessed in blocks of 26 at a time, or a total of 130 Presets (MIDI can address 128 Presets).
3. The first addressable Bank is defined by the Base Bank Number.
4. The 128 MIDI addressable Presets can be "remapped" to any location in the PEP 4530 memory by changing the Base Bank Number.
5. By changing the Base Bank Number, almost the entire PEP 4530 program memory can be accessed by MIDI.
6. By changing the Base Bank Number, the entire PEP 4530 program memory can be accessed by the Peavey RMC 2000 Remote MIDI Controller, thus extending its capability from 10 Presets to 530 Presets.
7. Example - To remap the MIDI accessible Presets to a starting location of Bank 26:
   a. Using the MODE select key and the Increment/Decrement key, set the Base Bank to 26.
   b. Bank 26, Preset 1 is now reassigned to the location Bank 0, preset 1 or MIDI Program Preset 1 or RMC 2000 Bank A, preset 1.
   c. A new set of 128 Program Presets can now be accessed from MIDI, or a new set of 10 Program Presets can be accessed from the RMC 2000.
   d. Using this method, the Base Bank Number can be reset to any of the 106 banks, thus reassigning the accessible Program Presets to any location in the processor memory.

SPECIAL OPERATIONAL PRECAUTIONS

SIGNAL/LINE LEVEL INPUT/OUTPUT

NOTE: The Input Level switch (BB) should be set to provide the appropriate operating level. The instrument level input (or output) sensitivity is set at -20 dBm and the line level input (or output) sensitivity is set at +0 dBm. Properly setting this switch and adjusting the Input Level control (A) and Output Level control (W) will provide the best operating conditions. Failure to do so will result in increased noise levels at the output of the unit.

INPUT LEVEL

NOTE: The Input Level control (A) should always be set such that the Limit LED (B) flashes on the program material peaks. Failure to do so will result in increased operating noise at the output of the unit.

OUTPUT LEVEL

The Output Level control (W) should always be set to provide the appropriate signal level for the return unit connected to the output of the processor. Failure to do so will result in increased noise at the output of the unit.

AUTOMATIC BANDWIDTH CHANGES

NOTE: The internal microprocessor automatically selects the appropriate bandwidth for any particular delay setting. This is done in "real time" and results in modifications to the sound of the effect any time the delay time is changed. If this is done via a preset change, the PEP 4530 will automatically mute the output to avoid any displeasing sounds. If this is done using the Increment or Decrement keys (K), there will be a slight modification to the effect sound for a short time until the memory is cleared. This is not a malfunction. The bandwidth is modified at 1024 milliseconds and again at 2048 milliseconds if the delay time is being increased. The bandwidth is modified at 1023 milliseconds and again at 511 milliseconds if the delay time is being decreased. Bandwidth is modified only when delay time is increased or decreased beyond any of these delay points. Minor delay time adjustments will not cause the processor to reselect bandwidth if any adjustments have been made within a single bandwidth range.

POWER-ON PARAMETER SETTINGS

NOTE: Any time the processor is turned off, the current settings are saved in permanent memory. When the unit is turned on again, it will automatically power-up with the same settings as when the unit was turned off. Failure of the unit to retain such settings indicates that the internal battery supply has drained and should be charged again by plugging the unit into a wall outlet and turning it on for several hours.

FACTORY PROGRAM PRESETS

NOTE: The processor comes from the factory with ten prestored factory effects settings. Upon initial power-up, a copy of these programs will reside in two different memory locations. One copy will reside in Bank 0, Preset 1 through 5 and Bank 1, Preset 1 through 5; these presets can be modified at any time by the user and restored to any program preset locations. A second copy will reside in Bank 104, Preset 1 through 5 and Bank 105, Preset 1 through 5; these presets can be modified, but will always be restored to the original factory presets upon each new power-up. At any time these factory presets can be recalled from these locations, modified and moved to any other of the memory locations. If the internal battery back-up supply is allowed to completely drain, the processor will automatically re-initialize the entire memory to its factory-delivered contents.

FACTORY PRESETS — PEP 4530

PROGRAM PRESET	INPUT LEVEL	FEEDBACK LEVEL	MODULATION		OUTPUT MIX	DELAY mSEC	SYNC	FADE	FPR	FILTER
			DEPTH	SPEED						
0,1 104,1	6	9	10	1.5 Hz		1.0	OFF	OFF	ON	ON
0,2 104,2	6	9	8.5	1.5 Hz		5.0	OFF	OFF	ON	ON
0,3 104,3	6	9	2.5	5 Hz		10.0	OFF	OFF	ON	ON
0,4 104,4	6	0	2.5	5 Hz		20.0	OFF	OFF	ON	ON
0,5 104,5	6	0	0	0.1 Hz		100.0	OFF	OFF	ON	ON
1,1 105,1	6	9	0	0.1 Hz		100.0	OFF	OFF	ON	ON
1,2 105,2	6	9	8	0.1 Hz		112.0	OFF	OFF	ON	ON
1,3 105,3	6	0	0	0.1 Hz		1023	OFF	OFF	ON	ON
1,4 105,4	6	0	0	0.1 Hz		2047	OFF	OFF	ON	ON
1,5 105,5	6	0	0	0.1 Hz		4095	OFF	OFF	ON	ON
ALL OTHERS	6	0	0	0.1 Hz		511	OFF	OFF	ON	ON

DUE TO SLIGHT VARIATIONS IN COMPONENT TOLERANCES, AUDIBLE DIFFERENCES MAY EXIST BETWEEN THE INDICATED SETTINGS AND THE EXACT FACTORY SETTINGS.

SPECIFICATIONS

DELAY RANGE	0.1 to 4095 milliseconds
FREQUENCY RESPONSE	
Dry Signal	20 Hz to 20 kHz ± 1.0 dB
Delay Signal	20 Hz to 15 kHz @ up to 1023 milliseconds 20 Hz to 7 kHz @ up to 2047 milliseconds 20 Hz to 3 kHz @ up to 4095 milliseconds (± 1.0 dB)
QUANTIZATION	12 bits A/D & D/A conversion
SAMPLE RATE	Variable - dependent on max. delay
ANTI-ALIASING FILTER	7-Pole Elliptic Tracking Low Pass Filter 42 dB/Octave minimum roll-off
SIGNAL-TO-NOISE	72 dB minimum delay (quantization) 100 dB minimum delay (ambient) 100 dB minimum dry
DYNAMIC RANGE	108 dB minimum delay 108 dB minimum dry
INPUTS	
Low Level	-20 dBm
Line Level	+0 dBm
OUTPUTS	
Low Level Stereo	-20 dBm
Line Level Stereo	+0 dBm
HEADROOM	
Active	+12 dB reserve
Limit	+6 dB reserve
VCO MODULATION	Complete microprocessor control of the LFO modulation
LFO Depth	0 to 100%
LFO Frequency	0.1 Hz to 10 Hz
LFO Waveshape	Sine wave
SYNC INPUT	Automatic synchronization to any other system from 100 milliseconds to 4 seconds. Active low, TTL compatible.
AUX. FOOTSWITCH	Dual Momentary, Peavey #0005067 (Optional).
MIDI PROG. FOOTSWITCH	Complete control of all program preset selections via standard MIDI interface controls. Both MIDI In and MIDI Thru interfaces are provided. Peavey model RMC™ 2000 (Optional).
MIDI CHANNEL SELECT	Channels 1 through 8 are available.

DANGER

EXPOSURE TO EXTREMELY HIGH NOISE LEVELS MAY CAUSE A PERMANENT HEARING LOSS. INDIVIDUALS VARY CONSIDERABLY IN SUSCEPTIBILITY TO NOISE INDUCED HEARING LOSS, BUT NEARLY EVERYONE WILL LOSE SOME HEARING IF EXPOSED TO SUFFICIENTLY INTENSE NOISE FOR A SUFFICIENT TIME.

THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAS SPECIFIED THE FOLLOWING PERMISSIBLE NOISE LEVEL EXPOSURES:

DURATION PER DAY IN HOURS	SOUND LEVEL dBA, SLOW RESPONSE
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS OF THE ABOVE PERMISSIBLE LIMITS COULD RESULT IN SOME HEARING LOSS.

EAR PLUGS OR PROTECTORS IN THE EAR CANALS OR OVER THE EARS MUST BE WORN WHEN OPERATING THIS AMPLIFICATION SYSTEM IN ORDER TO PREVENT A PERMANENT HEARING LOSS IF EXPOSURE IS IN EXCESS OF THE LIMITS AS SET FORTH ABOVE. TO INSURE AGAINST POTENTIALLY DANGEROUS EXPOSURE TO HIGH SOUND PRESSURE LEVELS, IT IS RECOMMENDED THAT ALL PERSONS EXPOSED TO EQUIPMENT CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS SUCH AS THIS AMPLIFICATION SYSTEM BE PROTECTED BY HEARING PROTECTORS WHILE THIS UNIT IS IN OPERATION.

CAUTION

THIS MIXING CONSOLE/PREAMP/EFFECTS DEVICE HAS BEEN DESIGNED AND CONSTRUCTED TO PROVIDE ADEQUATE SIGNAL (VOLTAGE) FOR PLAYING MODERN MUSIC. IMPROPER USE OF THE GAIN/EQUALIZATION CONTROLS AND/OR IMPROPER USE OF INTERNAL/EXTERNAL BUSSES **MAY** CREATE CLIPPING (SQUARE WAVES) AND POSSIBLY CAUSE SUBSEQUENT DAMAGE TO THE LOUDSPEAKER SYSTEMS. EXTENDED OPERATION OF THE GAIN/EQUALIZATION CONTROLS IN THEIR MAXIMUM POSITIONS IS, THEREFORE, **NOT** RECOMMENDED. PLEASE BE AWARE THAT **MAXIMUM POWER** CAN BE OBTAINED WITH VERY LOW SETTINGS OF THE **GAIN/EQUALIZATION** CONTROLS IF THE INPUT SIGNAL IS VERY STRONG.

IT IS COMMON PRACTICE AMONG USERS OF SOUND REINFORCEMENT EQUIPMENT TO IDENTIFY THE INDIVIDUAL CHANNELS WITH A STRIP OF TAPE PLACED ABOVE OR BELOW THE ROW OF VOLUME FADERS. MANY TYPES OR BRANDS OF TAPE HAVE A VERY STRONG ADHESIVE WHICH CAN INHIBIT THE PAINT ON THE FACEPLATE AND ACTUALLY REMOVE THE PAINT WHEN THE TAPE IS REMOVED. WE STRONGLY RECOMMEND THAT SCOTCH TAPE NOT BE USED ON PAINTED SURFACES NOR ANY OTHER TAPE THAT IS NOT ESPECIALLY DESIGNED FOR SUCH APPLICATIONS. MEDIUM OR LIGHT ADHESIVE MASKING OR MIXER LABEL TAPE IS RECOMMENDED IF TAPE IS USED. ANY TAPE LEFT ON PAINTED SURFACE FOR EXTENDED PERIODS WILL BE DIFFICULT TO REMOVE. NEVER USE CLEAR OR SCOTCH TAPE FOR THESE APPLICATIONS.

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be retained for future reference.
3. Obey all cautions in the operating instructions and on the back of the unit.
4. All operating instructions should be followed.
5. This product should not be used near water, i.e. a bathtub, sink, swimming pool, wet basement, etc.
6. This product should be located so that its position does not interfere with its proper ventilation. It should not be placed flat against a wall or placed in a built-in enclosure that will impede the flow of cooling air.
7. This product should not be placed near a source of heat such as a stove, heater, radiator or another heat producing amplifier.
8. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
9. Never break off the ground pin on the power supply cord. For more information on grounding write for our free booklet "Shock Hazard and Grounding."
10. Power supply cords should always be handled carefully. Never walk or place equipment on power supply cords. Periodically check cords for cuts or signs of stress, especially at the plug and the point where the cord exits the unit.
11. The power supply cord should be unplugged when the unit is to be unused for long periods of time.
12. Metal parts can be cleaned with a damp rag. The vinyl covering used on some units can be cleaned with a damp rag, or an ammonia based household cleaner if necessary.
13. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation holes or any other openings.
14. This unit should be checked by a qualified service technician if:
    A. The power supply cord or plug has been damaged.
    B. Anything has fallen or been spilled into the unit.
    C. The unit does not operate correctly.
    D. The unit has been dropped or the enclosure damaged.
15. The user should not attempt to service this equipment. All service work should be done by a qualified service technician.

Due to our efforts for constant improvement, features and specifications are subject to change without notice.

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Printed in U.S.A. ©1986

#80301008 7/86